

CLAIMS

What is claimed is:

1. A system for offering Internet Protocol (IP) multicast services in mesh TDMA satellite networks, said system comprising:

a plurality of terminals for providing said IP multicast services;
a route server for establishing and maintaining routing information;

5 and

a controller operative to allocate broadcast bursts to said terminals based on requests from said terminals via said route server.

2. A system according to claim 1, wherein said controller is operative to allocate said broadcast bursts through the selection of at least one slot in a TDMA frame to be used only for broadcast communication.

3. A system according to claim 1, wherein said IP multicast services are initiated between said terminals via said route server and said controller, and are thereafter maintained between said terminals.

4. A system according to claim 1, wherein said controller is operative to allocate said broadcast bursts in response to a request from one of said terminals, and thereafter all of said terminals listen to said broadcast bursts.

5. A system according to claim 4, wherein said controller is operative to allocate said broadcast bursts using an algorithm known as the Burst Time Plan (BTP) generation algorithm.

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6. A system according to claim 4, wherein said controller allocates said broadcast bursts using point-to-point, multicast, or broadcast transmissions.

7. A system according to claim 4, wherein said controller dynamically allocates said broadcast bursts according to user demand for multicast services, and further wherein a maximum multicast capacity is pre-configured by a network operator.

8. A system according to claim 4, wherein said allocation occurs at least one of when the multicast transmission is setup, and after the multicast transmission is setup, based on changes in multicast traffic volume, as reported by terminals to said controller.

9. A system according to claim 1, wherein said terminals exchange routing information with said route server.

10. A system according to claim 9, wherein said terminals transmit and receive said broadcast bursts based on said routing information.

11. A system according to claim 10, wherein said routing information includes a multicast routing protocol which is run by said route server.

12. A system according to claim 11, wherein said multicast routing protocol is DVMRP.

13. A system according to claim 11, wherein said multicast routing protocol is PIM-SM.

14. A method for offering Internet Protocol (IP) multicast services in a mesh TDMA satellite network, said method comprising:

- 5 establishing and maintaining routing information in a route server;
assigning at least one slot in a TDMA frame to one of a plurality of
terminals;
broadcasting said IP multicast services over said at least one slot.

15. A method according to claim 14, further comprising:

- transmitting IP multicast packets from a source to said route server;
forwarding said routing information to said terminals;
broadcasting said IP multicast packets from said route server to said
5 terminals;
broadcasting said IP multicast packets between said terminals via said
at least one slot;
refining a receiving set of said terminals, which receive said IP
multicast packets, based on prune messages received at said route server from
10 a non-receiving set of said terminals, which do not receive said IP multicast
packets.

16. A method according to claim 14, further comprising:

- sending join messages from a router to a rendezvous point (RP) via
said route server;
updating said routing information in said route server based on said
5 join messages;
broadcasting said updated routing information to said terminals;
unicasting IP multicast packets to said rendezvous point; and
multicasting said IP multicast packets from said rendezvous point
based on said updated routing information.